

WHAT IS CLAIMED IS:

1. An infrared input section for motion detectors, occupancy sensors and other similar systems comprising:

5 a first lens array of one or more elements, at least one element being positioned to receive and at least partially focus incident infrared radiation;

a second lens array including a plurality of elements, at least one element being positioned to receive and focus the
10 partially focused infrared radiation; and

at least one detector positioned to receive the infrared radiation focused by the second lens array.

2. An infrared input section for motion detectors, occupancy
15 sensors and other similar systems as in claim 1 wherein the first lens array includes one or more elements that focus incident infrared radiation directly onto at least one detector and one or more elements that partially focus incident infrared radiation onto one or more elements of the
20 second lens array.

3. An infrared input section for motion detectors, occupancy sensors and other similar systems as in claim 1 wherein the first lens array is substantially flat and is positioned
25 substantially flush with a front surface of the system.

4. An infrared input section for motion detectors, occupancy sensors and other similar systems as in claim 2 wherein the first lens array is substantially flat and is positioned substantially flush with a front surface of the system.

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5. An infrared input section for motion detectors, occupancy sensors and other similar systems as in claim 1 further comprising an intermediate lens array positioned between the first lens array and the second lens array.

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6. An infrared input section for motion detectors, occupancy sensors and other similar systems as in claim 2 further comprising an intermediate lens array positioned between the first lens array and the second lens array.

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7. An infrared input section for motion detectors, occupancy sensors and other similar systems as in claim 1 wherein at least one of the lens arrays includes one or more microlenses.

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8. An infrared input section for motion detectors, occupancy sensors and other similar systems as in claim 5 wherein at least one of the lens arrays includes one or more microlenses.

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9. An infrared input section for motion detectors, occupancy sensors and other similar systems as in claim 1 wherein at least one of the lens arrays is a diffractive optics array.

10. An infrared input section for motion detectors, occupancy sensors and other similar systems as in claim 5 wherein at least one of the lens arrays is a diffractive optics array.

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11. An infrared input section for motion detectors, occupancy sensors and other similar systems comprising:

at least one mirror positioned adjacent to an infrared entrance aperture, the at least one mirror directing and
10 optionally partially focusing incident infrared radiation;

a first lens array of one or more elements, at least one element positioned to receive and focus incident infrared radiation directed by the at least one mirror;

a second lens array including a plurality of elements, at
15 least one element being positioned to receive and further focus infrared radiation focused by the first lens array; and

at least one detector positioned to receive infrared radiation focused by the second lens array.

20 12. An infrared input section for motion detectors, occupancy sensors and other similar systems as in claim 11 wherein the at least one mirror is configured to focus incident infrared radiation directly onto the at least one detector.

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13. An infrared input section for motion detectors, occupancy sensors and other similar systems as in claim 11 further

comprising an intermediate lens array positioned between the first lens array and the second lens array.

14. An infrared input section for motion detectors, occupancy
5 sensors and other similar systems as in claim 12 further comprising an intermediate lens array positioned between the first lens array and the second lens array.

15. An infrared input section for motion detectors, occupancy
10 sensors and other similar systems as in claim 11 further comprising a clear cover element through which incident infrared radiation passes before being directed by the at least one mirror.

15 16. An infrared input section for motion detectors, occupancy sensors and other similar systems as in claim 15 wherein the clear cover element comprises one or more lens elements.

17. An infrared input section for motion detectors, occupancy
20 sensors and other similar systems as in claim 12 further comprising a clear cover element through which incident infrared radiation passes before being directed by the at least one mirror.

25 18. An infrared input section for motion detectors, occupancy sensors and other similar systems as in claim 17 the clear cover element comprises one or more lens elements.

19. An infrared input section for motion detectors, occupancy sensors and other similar systems as in claim 11 wherein at least one of the lens arrays includes one or more microlenses.

5 20. An infrared input section for motion detectors, occupancy sensors and other similar systems as in claim 13 wherein at least one of the lens arrays includes one or more microlenses.

21. An infrared input section for motion detectors, occupancy
10 sensors and other similar systems as in claim 11 wherein at least one of the lens arrays is a diffractive optics array.

22. An infrared input section for motion detectors, occupancy sensors and other similar systems as in claim 13 wherein at
15 least one of the lens arrays is a diffractive optics array.

23. An infrared input section for motion detectors, occupancy sensors and other similar systems comprising:

a first lens array of one or more elements, at least one
20 element being positioned to receive and at least partially focus incident infrared radiation;

at least one mirror positioned to reflect infrared radiation partially focused by the first lens array;

a second lens array including a plurality of elements, at
25 least one element being positioned to receive and further focus infrared radiation reflected by the at least one mirror;
and

at least one detector positioned to receive infrared radiation focused by the second lens array.

24. An infrared input section for motion detectors, occupancy
5 sensors and other similar systems as in claim 23 wherein the
at least one mirror reflects incident infrared radiation
directly onto the at least one detector.

25. An infrared input section for motion detectors, occupancy
10 sensors and other similar systems as in claim 23 further
comprising an intermediate lens array positioned between the
first lens array and the second lens array.

26. An infrared input section for motion detectors, occupancy
15 sensors and other similar systems as in claim 24 further
comprising an intermediate lens array positioned between the
first lens array and the second lens array.

27. An infrared input section for motion detectors, occupancy
20 sensors and other similar systems as in claim 23 wherein at
least one of the lens arrays includes one or more microlenses.

28. An infrared input section for motion detectors, occupancy
sensors and other similar systems as in claim 25 wherein at
25 least one of the lens arrays includes one or more microlenses.

29. An infrared input section for motion detectors, occupancy sensors and other similar systems as in claim 23 wherein at least one of the lens arrays is a diffractive optics array.

5 30. An infrared input section for motion detectors, occupancy sensors and other similar systems as in claim 25 wherein at least one of the lens arrays is a diffractive optics array.

31. In an electrical switch having structure movable between
10 an on position and an on off position, the electrical switch having a portion exposed to ambient radiation upon installation, the improvement comprising:

an entrance aperture on the electrical switch, the entrance aperture configured to admit a portion of the ambient
15 radiation to a detector for sensing changes in ambient radiation.

32. An electrical switch as in claim 31 wherein the entrance aperture is located on the movable structure.

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33. An electrical switch as in claim 31 further comprising a radiation-transparent cover element over at least a portion of the entrance aperture.

25 34. An electrical switch as in claim 33 wherein the cover element comprises a lens array of one or more elements.

35. An electrical switch as in claim 33 wherein the entrance aperture is located on the movable structure.